



UNISONIC TECHNOLOGIES CO., LTD

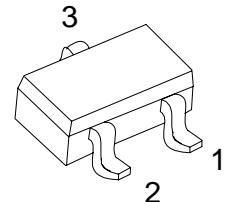
## MMBT1616/A

NPN SILICON TRANSISTOR

NPN EPITAXIAL SILICON  
TRANSISTOR

### ■ DESCRIPTION

- \* Audio frequency power amplifier
- \* Medium speed switching



SOT-23

\*Pb-free plating product number:  
MMBT1616L/MMBT16AL

### ■ ORDERING INFORMATION

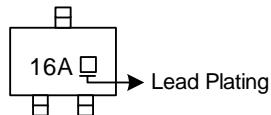
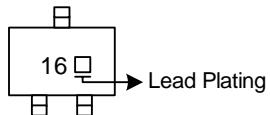
Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
MMBT1616-x-AE3-R	MMBT1616L-x-AE3-R	SOT-23	E	B	C	Tape Reel
MMBT1616A-x-AE3-R	MMBT1616AL-x-AE3-R	SOT-23	E	B	C	Tape Reel

MMBT1616L-x-AE3-R	(1)Packing Type (2)Package Type (3)Rank (4)Lead Plating	(1) R: Tape Reel (2) AE3: SOT-23 (3) x: refer to Classification of $h_{FE1}$ (4) L: Lead Free Plating. Blank: Pb/Sn
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### ■ MARKING

UTC MMBT1616

UTC MMBT1616A



## ■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage	1616	$V_{CBO}$	60	V
	1616A		120	V
Collector-Emitter Voltage	1616	$V_{CEO}$	50	V
	1616A		60	V
Emitter to Base Voltage		$V_{EBO}$	6	V
Collector Current	DC	$I_C$	1	A
	Pulse*	$I_C$	2	A
Total Power Dissipation ( $T_a=25^\circ C$ )		$P_C$	350	mW
Junction Temperature		$T_J$	+150	
Storage Temperature		$T_{STG}$	-55 ~ +150	

Note (\*) Pulse width≤10ms, Duty cycle<50%

1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.  
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

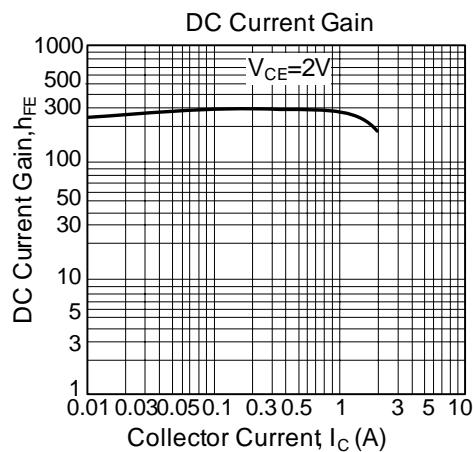
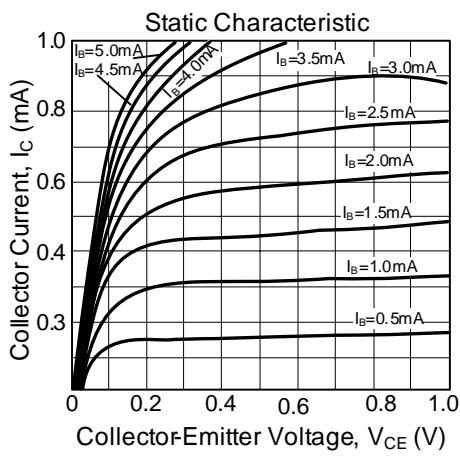
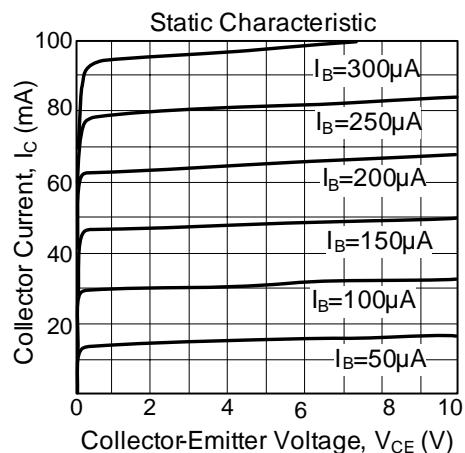
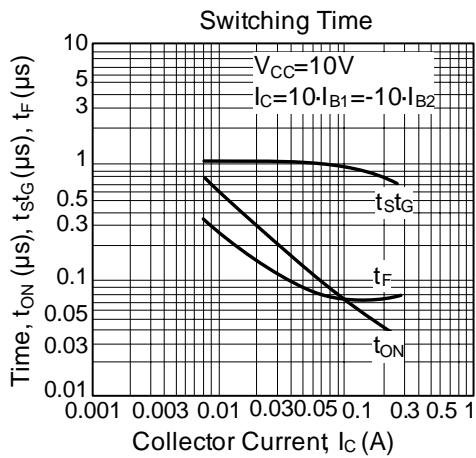
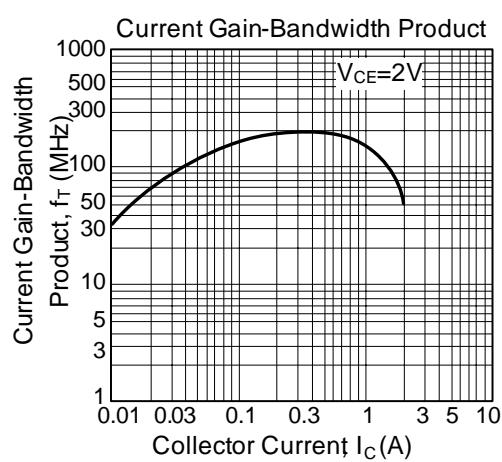
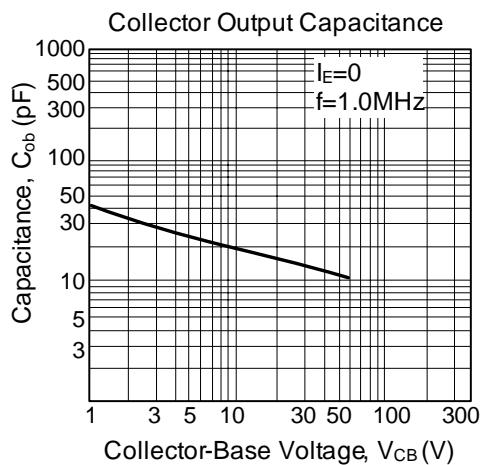
■ ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ C$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-Off Current	$I_{CBO}$	$V_{CB}=60V$			100	nA
Emitter Cut-Off Current	$I_{EBO}$	$V_{EB}= 6V$			100	nA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=1A, I_B=50mA$		0.15	0.3	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=1A, I_B=50mA$		0.9	1.2	V
Base Emitter On Voltage	$V_{BE(ON)}$	$V_{CE}=2V, I_C=50mA$	600	640	700	mV
DC Current Gain	$h_{FE1}$	$V_{CE}=2V, I_C=100mA$	135		600	
	$h_{FE2}$		135		400	
Current Gain Bandwidth Product	$f_T$	$V_{CE}=2V, I_C=100mA$	100	160		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$			19	pF
Turn On Time	$t_{ON}$	$V_{CE}=10V, I_C=100mA$		0.07		us
Storage Time	$t_S$	$ I_{B1}=-I_{B2} =10mA$		0.95		us
Fall Time	$t_F$	$V_{BE(OFF)}=-2 ~ -3V$		0.07		us

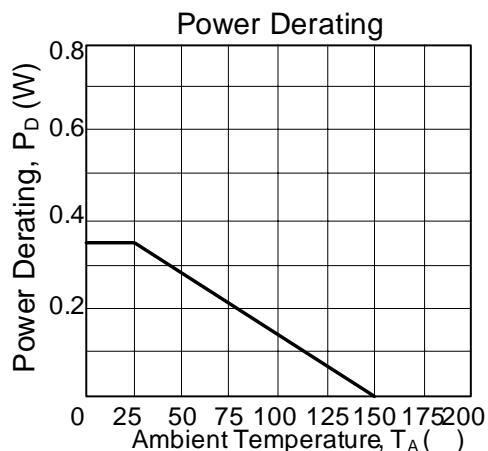
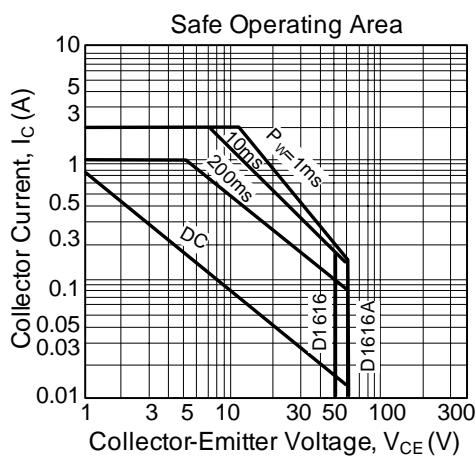
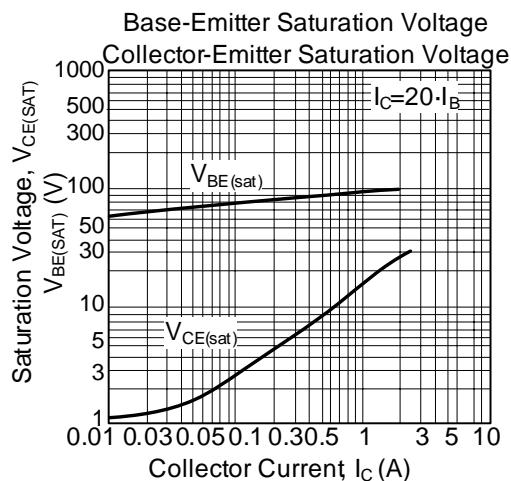
■ CLASSIFICATION OF  $h_{FE1}$ 

RANK	Y	G	L
$h_{FE1}$	135-270	200-400	300-600

### ■ TYPICAL CHARACTERISTICS



## ■ TYPICAL CHARACTERISTICS(Cont.)



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